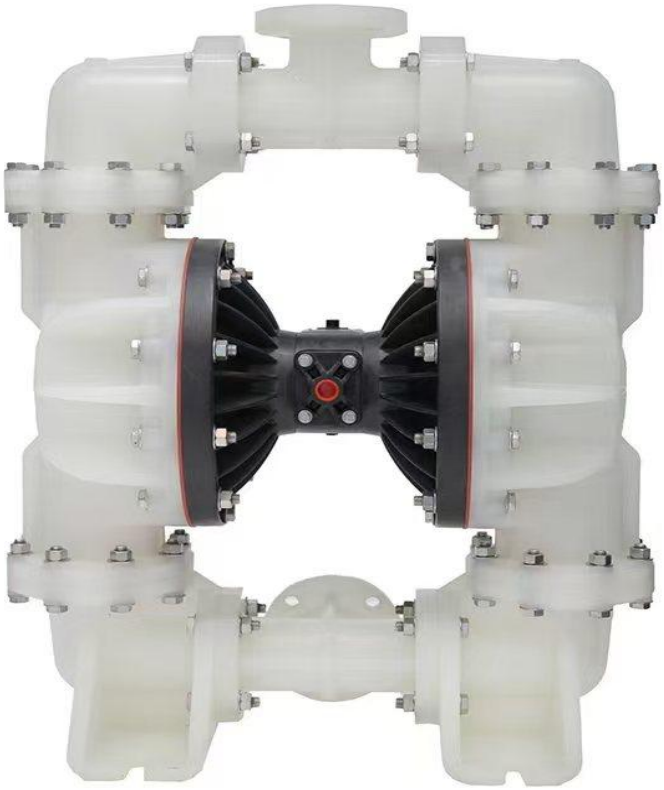
MODEL: N30 Non- Metallic

Assembly, Installation and Operation Manual

QUALI-FLO™



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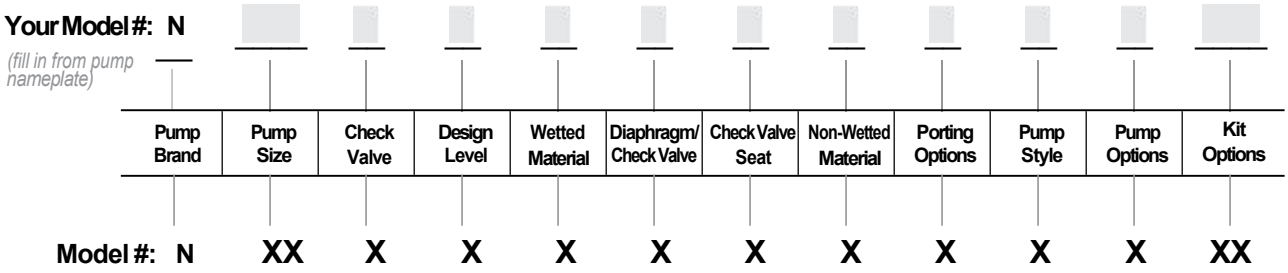
Explanation of Pump Nomenclature



Pump Brand
N

Pump Size
30 3"

Check Valve Type
B Ball

Design Level
3 Design Level

Wetted Material

P Polypropylene

Diaphragm/Check Valve Materials
1 Santoprene/Santoprene
2 PTFE-Santoprene Backup/PTFE
3 PTFE Pumping, PTFE - Santoprene, Backup Driver / PTFE
4 Santoprene Pumping, Santoprene Driver / Santoprene
M Santoprene/PTFE

Check Valve Seat

K PVDF
P Polypropylene

Non-Wetted Material Options

P 40% Glass Filled Polypropylene

Porting Options

A ANSI Flange

D DIN Flange

Pump Options
0 None

Performance

N30 NON-METALLIC

SUCTION/DISCHARGE PORT SIZE
- 3" ANSI Flange or 80mm DIN Flange

CAPACITY
- 0 to 280 US gallons per minute (1060 liters per minute)

AIR DISTRIBUTION VALVE
- No-lube, no-stall design

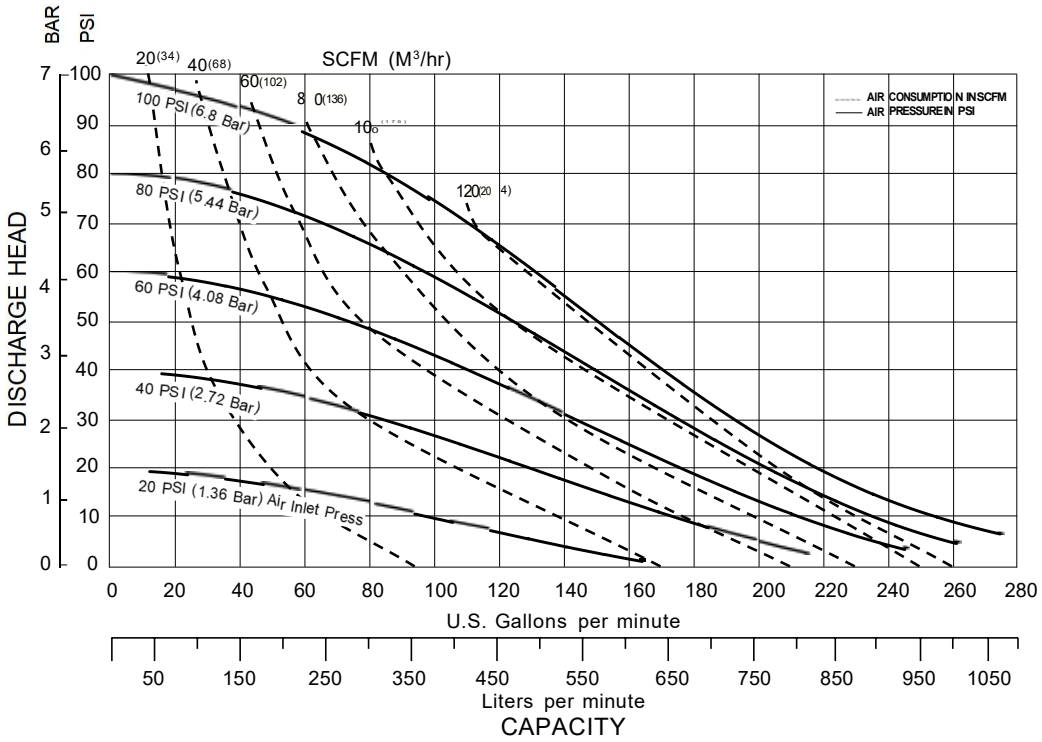
SOLIDS-HANDLING
- Up to .75 (19mm)

HEADS UP TO
- 100 psi or 231 ft. of water (7 bar or 70 meters)

MAXIMUM OPERATING PRESSURE
- 100 psi (7 bar)

DISPLACEMENT/STROKE
- 1.0 US gallon (3.78 liter)

SHIPPING WEIGHT
- 208 lbs (94kg) Polypropylene



Materials

Material Profile:	Operating Temperatures:	
⚠ *CAUTION! Operating temperature limitations are as follows:*	Max.	Min.
Conductive Acetal: Tough,impact resistant, ductile. Good abrasion resistance and low friction surface. Generally inert, with good chemical resistance except for strong acids and oxidizing agents.	190°F 88°C	-20°F -29°C
EPDM: Shows very good water and chemical resistance. Has poor resistance to oils and solvents, but is fair in ketones and alcohols.	280°F 138°C	-40°F -40°C
FKM: (Fluorocarbon) Shows good resistance to a wide range of oils and solvents; especially all aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable oils. Hot water or hot aqueous solutions (over 70°F(21°C)) will attack FKM.	350°F 177°C	-40°F -40°C
Hytrel®: Good on acids, bases, amines and glycols at room temperatures only.	220°F 104°C	-20°F -29°C
Neoprene: All purpose. Resistance to vegetable oils. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, ketones, esters and nitro hydrocarbons and chlorinated aromatic hydrocarbons.	200°F 93°C	-10°F -23°C
Nitrile: General purpose, oil-resistant. Shows good solvent, oil, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons.	190°F 88°C	-10°F -23°C
Nylon: 6/6 High strength and toughness over a wide temperature range. Moderate to good resistance to fuels, oils and chemicals.	180°F 82°C	32°F 0°C
Polypropylene: A thermoplastic polymer. Moderate tensile and flex strength. Resists stong acids and alkali. Attacked by chlorine,fuming nitric acid and other strong oxidizing agents.	180°F 82°C	32°F 0°C
PVDF: (Polyvinylidene Fluoride) A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and impact resistance.	250°F 121°C	0°F -18°C
Santoprene®: Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.	275°F 135°C	-40°F -40°C
UHMW PE: A thermoplastic that is highly resistant to a broad range of chemicals. Exhibits outstanding abrasion and impact resistance, along with environmental stress-cracking resistance.	180°F 82°C	-35°F -37°C
Urethane: Shows good resistance to abrasives. Has poor resistance to most solvents and oils.	150°F 66°C	32°F 0°C
Virgin PTFE: (PFA/TFE) Chemically inert, virtually impervious. Very few chemicals are known to chemically react with PTFE; molten alkali metals, turbulent liquid or gaseous fluorine and a few fluoro-chemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.	220°F 104°C	-35°F -37°C

Maximum and Minimum Temperatures are the limits for which these materials can be operated. Temperatures coupled with pressure affect the longevity of diaphragm pump components. Maximum life should not be expected at the extreme limits of the temperature ranges.

Metals:

Stainless Steel: Equal to or exceeding ASTM specification A743 CF-8Mfor corrosion resistant iron chromium, iron chromium nickel and nickel based alloy castings for general applications. Commonly referred to as 316 Stainless Steel in the pump industry.

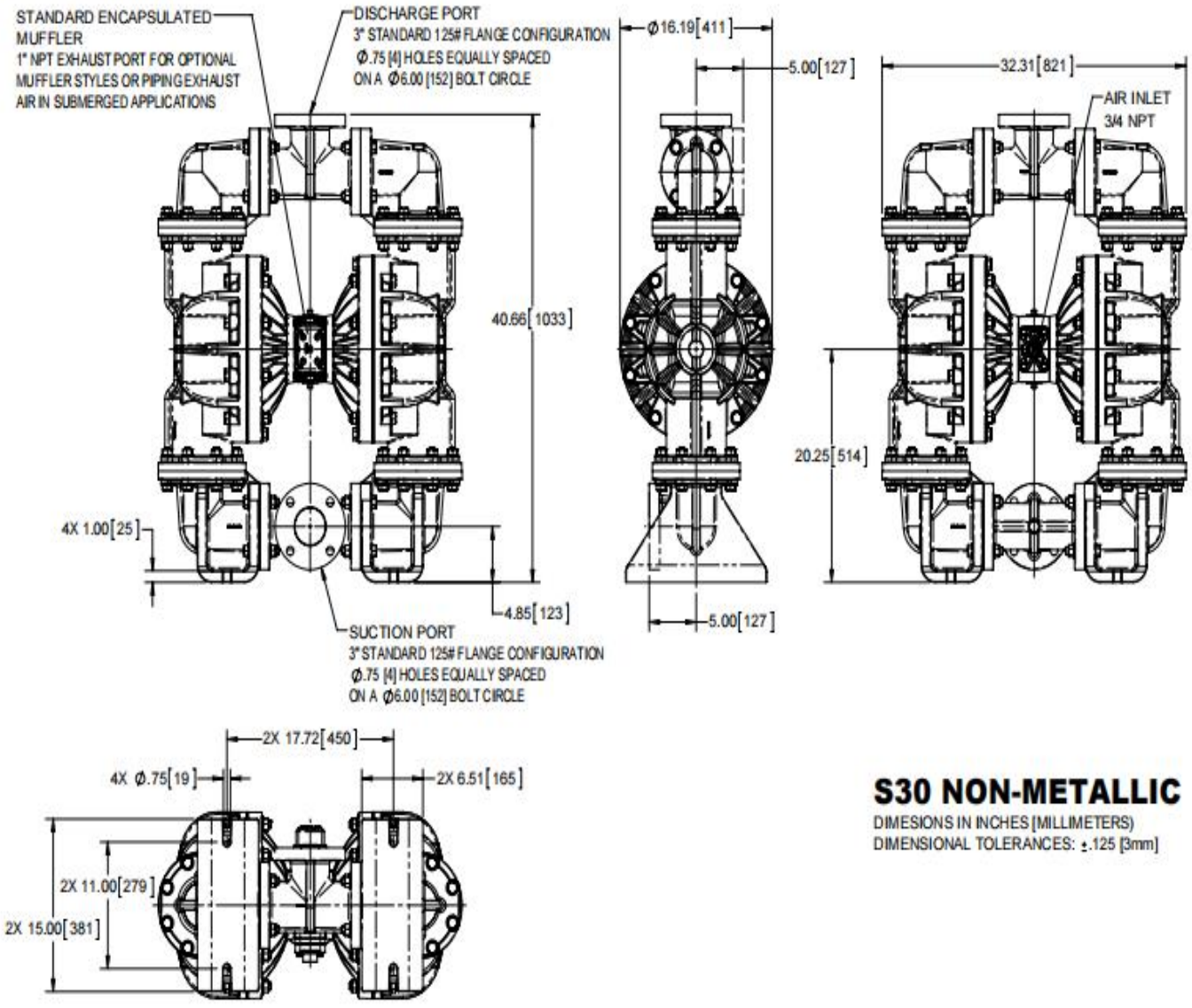
For specific applications, always consult the Chemical Resistance Chart.

Ambient temperature range: -20°C to +40°C
Process temperature range: -20°C to +80°C for models rated as category 1 equipment
-20°C to +100°C for models rated as category 2 equipment

In addition, the ambient temperature range and the process temperature range do not exceed the operating temperature range of the applied non-metallic parts as listed in the manuals of the pumps.

Dimensional Drawings

Dimensions in Inches [ ] in Millimeters. Dimensional tolerance: +/- 1/8" [ ] +/- 3mm

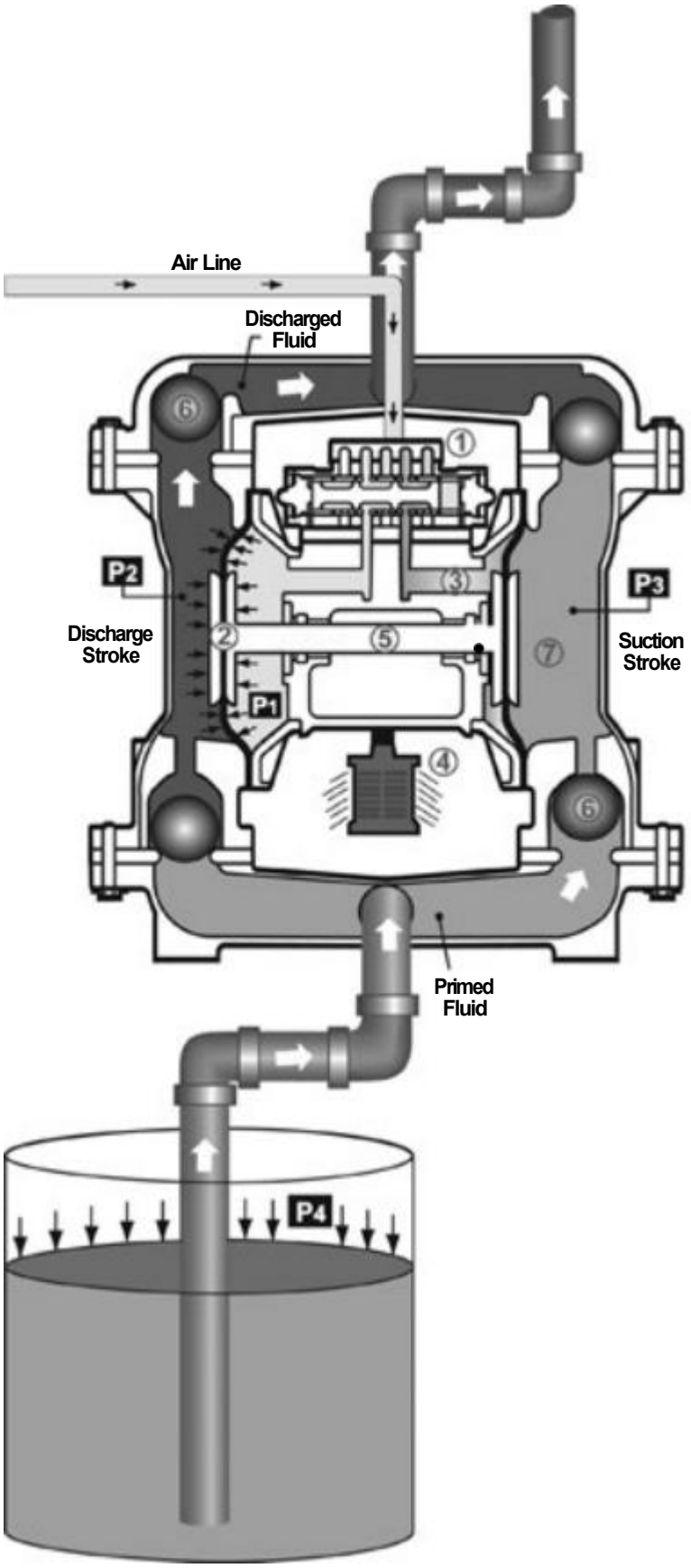


S30 NON-METALLIC

DIMESIONS IN INCHES [MILLIMETERS]
DIMENSIONAL TOLERANCES: ±.125 [3mm]

N30 Non-Metallic

Principle of Pump Operation



Air-Operated Double Diaphragm (AODD) pumps are powered by compressed air or nitrogen.

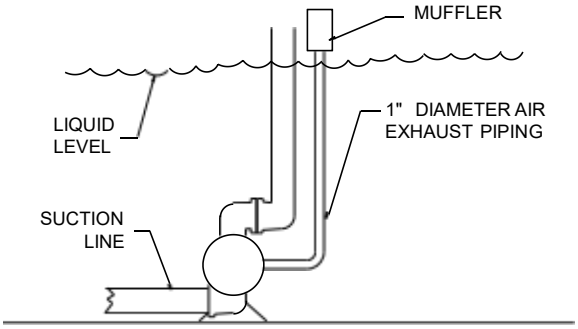
The main directional (air) control valve ① distributes compressed air to an air chamber, exerting uniform pressure over the inner surface of the diaphragm ②. At the same time, the exhausting air ③ from behind the opposite diaphragm is directed through the air valve assembly(s) to an exhaust port ④.

As inner chamber pressure **(P1)** exceeds liquid chamber pressure **(P2)**, the rod ⑤ connected diaphragms shift together creating discharge on one side and suction on the opposite side. The discharged and primed liquid's directions are controlled by the check valves (ball or flap) ⑥ orientation.

The pump primes as a result of the suction stroke. The suction stroke lowers the chamber pressure **(P3)** increasing the chamber volume. This results in a pressure differential necessary for atmospheric pressure **(P4)** to push the fluid through the suction piping and across the suction side check valve and into the outer fluid chamber ⑦.

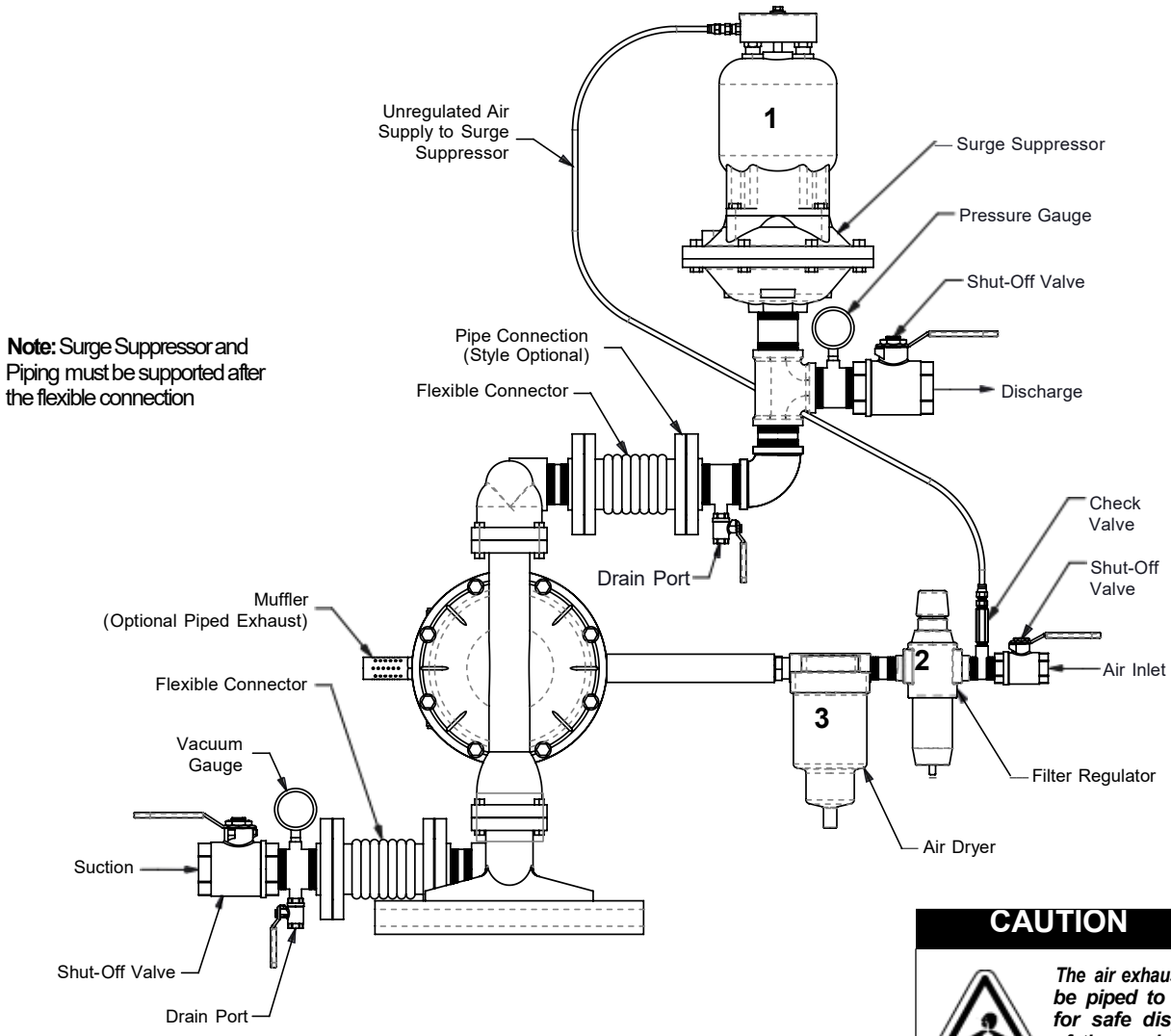
Suction (side) stroking also initiates the reciprocating (shifting, stroking or cycling) action of the pump. The suction diaphragm's movement is mechanically pulled through its stroke. The diaphragm's inner plate makes contact with an actuator plunger aligned to shift the pilot signaling valve. Once actuated, the pilot valvesends a pressure signal to the opposite end of the main directional air valve, redirecting the compressed air to the opposite inner chamber.

SUBMERGED ILLUSTRATION



Pump can be submerged if the pump materials of construction are compatible with the liquid being pumped. The air exhaust must be piped above the liquid level. When the pumped product source is at a higher level than the pump (flooded suction condition), pipe the exhaust higher than the product source to prevent siphoning spills.

Recommended Installation Guide



Note: Surge Suppressor and Piping must be supported after the flexible connection

CAUTION

The air exhaust should be piped to an area for safe disposition of the product being pumped, in the event of a diaphragm failure.

Installation And Start-Up

Locate the pump as close to the product being pumped as possible. Keep the suction line length and number of fittings to a minimum. Do not reduce the suction line diameter.

Air Supply

Connect the pump air inlet to an air supply with sufficient capacity and pressure to achieve desired performance. A pressure regulating valve should be installed to insure air supply pressure does not exceed recommended limits.

Air Valve Lubrication

The air distribution system is designed to operate WITHOUT lubrication. This is the standard mode of operation. If lubrication is desired, install an air line lubricator set to deliver one drop of SAE 10 non-detergent oil for every 20 SCFM (9.4 liters/sec.) of air the pump consumes. Consult the Performance Curve to determine air consumption.

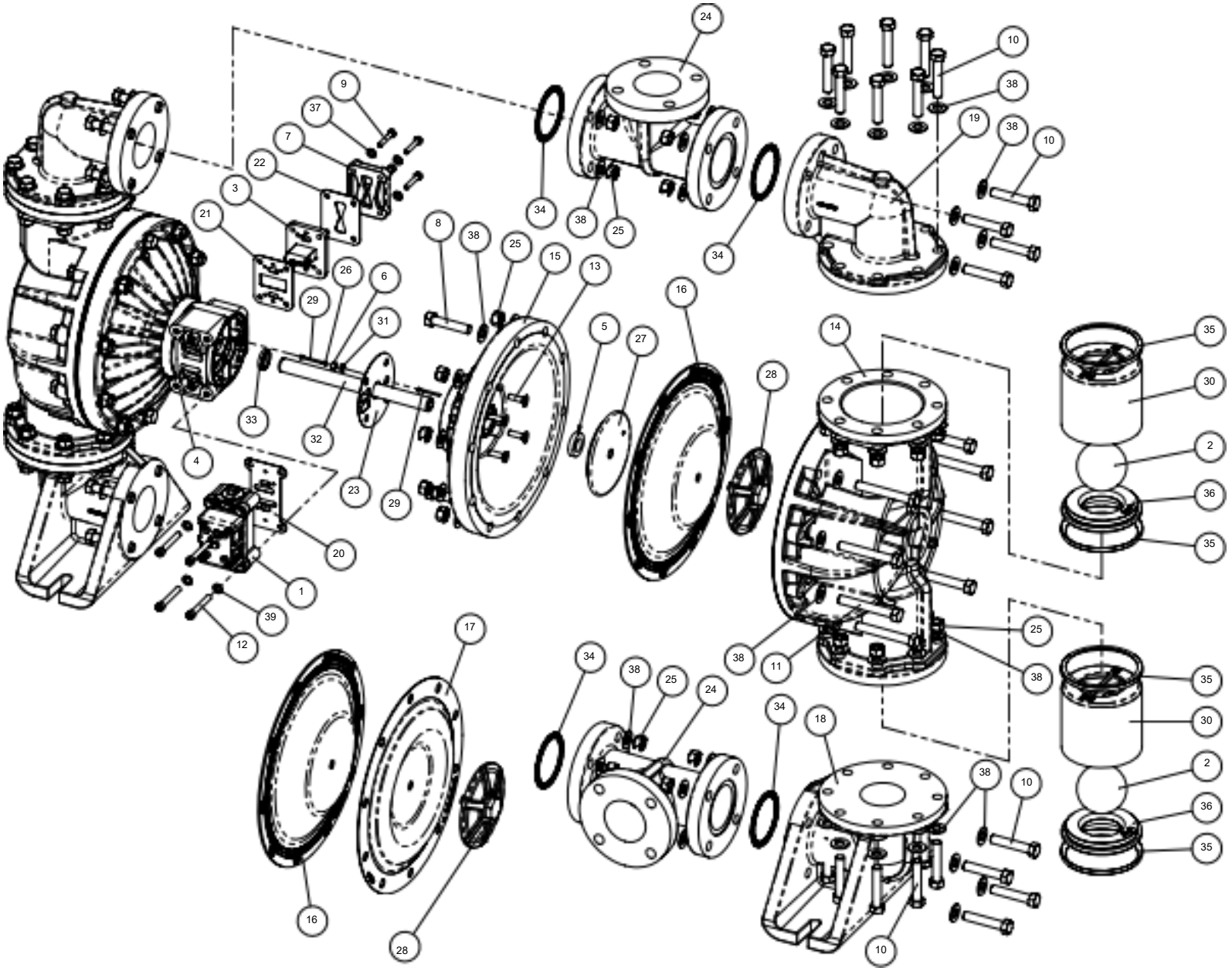
Air Line Moisture

Water in the compressed air supply may cause icing or freezing of the exhaust air, causing the pump to cycle erratically or stop operating. Water in the air supply can be reduced by using a point-of-use air dryer.

Air Inlet And Priming

To start the pump, slightly open the air shut-off valve. After the pump primes, the air valve can be opened to increase air flow as desired. If opening the valve increases cycling rate, but does not increase the rate of flow, cavitation has occurred. The valve should be closed slightly to obtain the most efficient air flow to pump flow ratio.

Composite Repair Parts Drawing



PTFE OVERLAY OPTION

Composite Repair Parts List

	Item	Part Number	Description	Qty
	1	N031-140-000	Air Valve Assembly (000 muffler)	1
	2	N050-015-600	Ball, Check - PTFE	4
	3	N095-110-558	Pilot Valve Assembly	1
	4	N114-024-551	Intermediate	1
	5	N132-035-360	Bumper,Diaphragm	2
	6	N135-034-506	Bushing.Plunger	2
	7	N165-113-551	Cap.Air Inlet	1
	8	N170-015-115	Capscrew.HxHd 5/8-11x2.75	4
	9	N170-069-115	Capscrew.HxHd 5/16-18x 1.75	4
	10	N170-111-115	Capscrew.HxHd 5/8-11x3.25	48
	11	N170-132-115	Capsorew.HxHd 5/8-11x4.5	16
	12	N171-053-115	Capscrew Soc-Hd 3/8-16X2.50	4
	13	N171-078-115	Capscrew,82 DEG FH.HEX SOC,3/8-16X1.25	8
	14	N196-151-552	Chamber,Outer-Polypropylene	2
	15	N196-223-551	Chamber,Inner	2
	16	N286-077-354	Diaphragm -Santoprene	2
	17	N286-078-600	Diaphragm.Overlay-PTFE	2
	18	N312-124-552	Elbow.Suction -Polypropylene	2
	19	N312-103-552	Elbow.Discharge-Polypropylene	2
	20	N360-093-360	Gasket,Air Valve	1
	21	N360-103-360	Gasket,Pilot Valve	1
	22	N360-104-379	Gasket,Air Inlet Cap	1
	23	N360-107-360	Gasket,Inner Chamber	2
	24	N518-226-552	Manifold-Polypropylene	2
	25	N545-009-115	Nut,Hex 5/8-11	64
	26	N560-001-360	O-ring	2
	27	N612-192-157	Plate,Inner Diaphragm(w/aluminum center)	2
	28	N612-253-552	Plate,Outer Diaphragm -Polypropylene	2
	29	N620-025-114	Plunger.Actuator	4
	30	N670-056-552	Retainer,Ball-Polypropylene	4
	31	N675-042-115	Retaining Ring	2
	32	N685-080-120	Rod,Diaphraam	1
	33	N720-004-360	Seal,Diaphragm Rod U-Cup	2
	34	N720-039-600	Seal,Manifold	4
	35	N720-043-600	Seal,Valve Module	8
	36	N722-131-552	Seat,Check Ball-Polypropylene	4
	37	N901-038-115	Washer.Flat 5/16	4
	38	N901-047-115	Washer.Flat 5/8	132
	39	N901-048-115	Washer Flat 3/8	4